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| ART UNIT | PAPER NUMBER |
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| 2841 | |

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/026,761 | SPREAFICO, SERGIO | |
| | Examiner | Art Unit | |
| | Jeremy C. Norris | 2841 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *01 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14,15 and 17-20* is/are rejected.

7)☒ Claim(s) *13 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-12, 14, 15, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3,562,401 (hereafter Long) in view of US 4,845,308 (hereafter Womack).

Long discloses, referring to figure 2, a superconducting cable comprising a support (100) with an inner surface which defines a channel wherein a cryogenic fluid flows (see col. 2, lines 45-50), a superconducting conductor (110) positioned externally to said support; a cryostat positioned externally to the superconducting conductor, said cryostat including a thermal insulation (170) enclosed between an inner tube (140) and an outer tube (160) and a protecting element (150) positioned between the superconducting conductor and the inner tube of the cryostat (see col. 4, lines 30-45).

Long does not specifically disclose an electric insulation layer positioned externally to the cryostat [claim 1]. However, it is well known in the art to wrap a superconducting cable in an outer dielectric layer as evidenced by Womack (see col. 3, 30-45). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to wrap the cable of Long in a dielectric layer as is well known in the art and evidenced by Womack. The motivation for doing so would have been to physically protect the cable from damage as well as preventing electric shock to one handling the cable.

Additionally, the modified invention of Long teaches, wherein the protecting element provided between the superconducting conductor and the inner tube has a substantial constant thickness [claim 2], wherein the protecting element has a smooth internal surface [claim 3], wherein the protecting element has a firm and flexible external surface [claim 4], wherein the protecting element has a firm and wherein the protecting element comprises one or more layers [claim 5], wherein the protecting element comprises polytetrafluoroethylene [claims 10, 11, 12], wherein at least one of the layers of the protecting element comprises at least one tape wire sheet of combination thereof [claim 14], wherein the at least one tape or sheet is positioned with juxtaposed windings or rims on the superconducting conductor [claim 15] (see col. 4, lines 30-45).

Regarding claim 6, Long in view of Womack teaches the claimed invention except Long does not specifically state that the protecting element is made of two layers. However, Long teaches that the insulation is to be of sufficient thickness so as

to provide the required support (see col. 4, lines 30-45). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to add a second (or thrid, etc.) layer to the protecting element of the invention of Long. The motivation for doing so would have been to ensure that the cable had the requisite support. Moreover, it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co, v. Bemis Co.,* 193 USPQ 8.

Regarding claims 7-9, Long in view of Womack teaches the claimed invention as described above except Long does not specifically state the size or range of sizes for the protecting element. However, such a modification would have been obvious to one of ordinary skill in the art as a mere change in size. Additionally, a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). Moreover, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233.

Similarly, Long discloses, referring to figure 2, a method for protecting a superconducting material of a superconducting cable for mechanical damage resulting from contact with an inner tube of a cryostat, comprising: including a protecting element (150) positioned between the superconducting conductor and the inner tube of the cryostat and wherein said superconducting cable comprises a support (100) with an inner surface which defines a channel wherein a cryogenic fluid flows, a superconducting conductor (110) positioned externally to said support, a cryostat

positioned externally to the superconducting conductor, said cryostat including a thermal insulation (170) enclosed between an inner tube (140) and an outer coaxial tube (160). Long does not specifically disclose an electric insulation layer positioned externally to the cryostat [claim 19]. However, it is well known in the art to wrap a superconducting cable in an outer dielectric layer as evidenced by Womack (see col. 3, 30-45). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to wrap the cable of Long in a dielectric layer as is well known in the art and evidenced by Womack. The motivation for doing so would have been to physically protect the cable from damage as well as preventing electric shock to one handling the cable.

Moreover, Long discloses, referring to figure 2, a current transmission/distribution network comprising at least one superconducting cable comprising a support (100) with an inner surface which defines a channel wherein a cryogenic fluid flows, a superconducting conductor (110) positioned externally to said support, and a cryostat positioned externally to the superconducting conductor, said cryostat including a thermal insulation (170) enclosed between an inner tube (140) and an outer coaxial tube (160) and a protecting element (150) positioned between the superconducting conductor and the inner tube of the cryostat. Long does not specifically disclose an electric insulation layer positioned externally to the cryostat [claim 19]. However, it is well known in the art to wrap a superconducting cable in an outer dielectric layer as evidenced by Womack (see col. 3, 30-45). Therefore, it would have been obvious, to

one having ordinary skill in the art, at the time of invention, to wrap the cable of Long in a dielectric layer as is well known in the art and evidenced by Womack. The motivation for doing so would have been to physically protect the cable from damage as well as preventing electric shock to one handling the cable.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Long in view of Womack as applied to claim 1 above, and further in view of US 6,512,311 (hereafter Metra)

Long in view of Womack teaches the claimed invention as described above except, while Long does mention that liquid nitrogen is used for cooling (see col. 3, lines 60-65), Long does not specifically mention that the temperature is typically of from about 65 to about 90 K. However, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to use liquid nitrogen at that temperature as it is well known in the art that this is the proper temperature range for liquid nitrogen as used in superconductive applications. Metra gives evidence of such knowledge being within the scope of the prior art (see col. 6, lines 35-45). Moreover, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Long in view of Womack as applied to claim 1 above, and further in view of US 6,509,819 (hereafter Snitchler).

Long in view of Womack teaches the claimed invention as described above with respect to claim 1, except Long does not specifically state that the superconducting material is an oxide of bismuth, lead, strontium, calcium, and copper (e.g. BSCCO). However, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to use BSCCO in place of the niobium superconducting material in the modified invention of Long as it well known that niobium based superconductors and BSCCO based superconductors are interchangeable, ad recognized equivalents. Such recognition as equivalent is given by Snitchler (see col. 1, lines 20-35). Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

***Allowable Subject Matter***

Claims 13 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claim 13 states the limitation "wherein the protecting element is made of copper". This limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art. Claim 16 states the limitation "wherein said cable has a clamped head configuration". This limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art.

### *Response to Arguments*

Applicant's arguments with respect to claims 1-12, 14, 15 and 17-20 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCSN

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